

volume delineation. Reasons for non-compliance are mostly problems with target coverage. Thirty-eight percent of the centers reported issues with target coverage; in 1 center they interpret the Dose Volume Histogram differently and are now looking at the 85% coverage of the planning target volume instead of the 95%.

**Conclusions:** The introduction of new delineation guidelines for the RNA in breast radiotherapy has a major impact on the treatment planning and dosimetry with especially introducing newer treatment techniques to achieve better target coverage. Surprisingly, not all centers use the centrally reviewed and corrected target delineation to guide their radiotherapy to the RNA.

#### PO-0778

**Delineation of the regional nodal areas in breast radiotherapy: What are the most problematic regions?**

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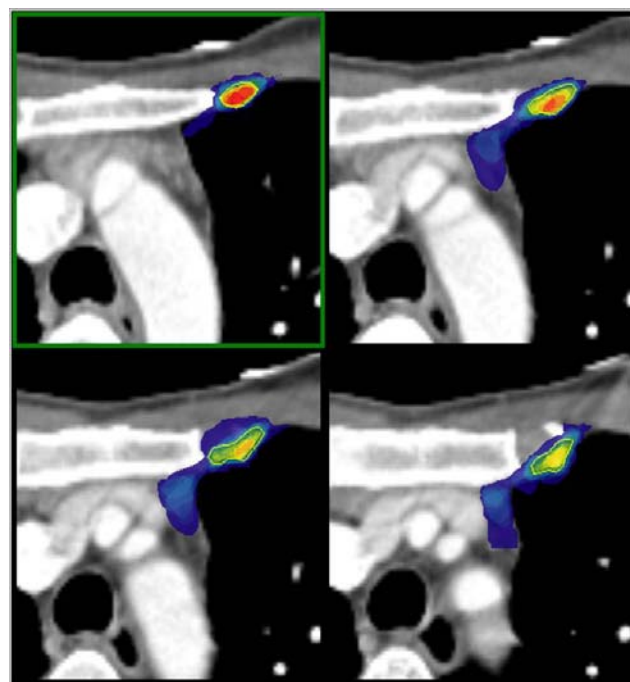
**Purpose/Objective:** In the era of fast technological evolution in breast radiotherapy (RT), a correct delineation of the target volumes becomes more and more important. The objective in this study is to investigate the performance of the accuracy of the delineation of the regional nodal areas (RNA) by different radiation-oncologists and to determine the most difficult regions to contour.

**Materials and Methods:** Before the start of the national central review study for the delineation of the RNA in breast RT, all participating centers were asked to delineate all the different RNA on a CT-scan with intravenous contrast of one specific patient. The delineation guidelines as well as the delineation atlases, covering both target volumes and normal anatomy, were provided. The obtained contours were compared with the reference contour to evaluate the conformity using the overlapping volume (OV). The OV is defined by the intersection of the obtained contour with the reference contour divided by the union of those contours.

**Results:** Twenty-two radiation-oncologists of 15 different radiotherapy departments performed the delineation of the RNA of that one specific case. In general, the mean OV of all lymph node regions together was 0.52 ( $\pm$  std 0.12). The most problematic areas were the rotter space and the internal mammary lymph node region (figure), with a mean OV of respectively 0.42 ( $\pm$  std 0.09) and 0.48 ( $\pm$  std 0.09). Level IV (= supraclavicular) and level I of the axilla were contoured the best with a mean OV of 0.6 ( $\pm$  std 0.13) and 0.56 ( $\pm$  std 0.08), followed by level III and level II of the axilla with a mean OV of respectively 0.53 ( $\pm$  std 0.11) and 0.51 ( $\pm$  std 0.11).

**Conclusions:** Delineation of the regional nodal areas in breast radiotherapy is not easy with a large intercenter and interobserver variation, even in the presence of extensively written guidelines and clear atlases. The most difficult areas

to contour in this pilot study were the rotter space and the internal mammary node region. The national central review study will tell us if practicing and central review lead to better contouring.



**Figure:** The performance of the delineation of a part of the internal mammary lymph node region. Red indicates very good agreement and blue does not. The yellow contour is the reference contour.

#### PO-0779

**SIB-SIP: Combined simultaneous integrated boost and protection for upper abdominal SBRT**

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**Purpose/Objective:** Upper abdominal SBRT is significantly compromised by late toxicity to bowel structures, mostly stomach, duodenum and small bowel and to a lesser degree also colon. Often ablative doses cannot be prescribed without infringement of dose constraints to bowel organs at risk (OAR), limiting SBRT to selected places had distant from bowel structures.

**Materials and Methods:** We developed a method of SBRT where all doses were prescribed according to ICRU guidelines. After generation of the main planning target volume (PTV) by isotropic expansion of 4 mm from internal target volume (ITV) as determined by 4D-imaging. We then defined a high dose SIB-PTV by a negative margin of 10 mm of the ITV. Dose prescribed to the SIB-PTV was 122-125% of the dose prescribed to the main PTV. Additionally, we defined a SIP-PTV by subtracting the planning risk volume (PRV) of a bowel OAR created by a 4 mm margin expansion of the OAR structure. Dose prescribed to the SIP-PTV was chosen to meet the defined dose constraints to OARs as described by Timmerman in 2008. Two fractionation regimes were used, 5 or 12 fractions, given every other day. Five fraction regimens